REMARKS

Applicants have presently cancelled Claims 16-18, 20 and 24-27. Claims 1-15 were previously cancelled. Accordingly, Claims 19, 21-23 are pending. Claim 22 has presently been amended.

Present Invention

The present invention provides a cassava starch which has a surprisingly high amylopectin content, and a method of isolating the same. In particular, the cassava starch provided by the present invention contains at least 95 wt.% amylopectin. In contrast, naturally-occurring tuber starches, such as cassava starch, comprise less than 85 wt.% amylopectin.

Rejection under 35 U.S.C. §112

Claims 22-23 and 26-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for the phrase "high amylopectin content." (Office Action, page 4, third paragraph.) This phrase has been deleted from the claims. Accordingly, this rejection is obviated.

Rejections under 35 U.S.C. §102

The subject matter of Claims 19 and 21 is rejected under 35 U.S.C. §102 as being anticipated by Shieh *et al.* (WO 93/10255).

Claims 19 and 21 recite cassava starch with an amylopectin level of at least 95wt%. In contrast, Shieh *et al.* do **not** disclose cassava starches. Moreover, Shieh *et al.* do not disclose cassava starches with a high amylopectin content.

Shieh *et al.* describe a process of making a cyclodextrin from **cereal starches** that contain amylopectin at a level of 95 wt% or more. In particular, **Shieh *et al.*** state that "[s]uitable starches for this process are waxy **maize**, waxy **rice** and waxy **barley**." (See page 4, penultimate paragraph.) The only tuber starch they disclose is potato starch with an 80% amylopectin content. (See page 9, Example 1.)

The Examiner seems to believe that high amylopectin cassava starch is equivalent to the starch of waxy maize, waxy rice and waxy barley. See paragraph bridging pages 5 and 6 of the Office Action. The Examiner also states that "Applicants must show a clear and distinguishable measure of the product as claimed with the product of the prior art."

On pages 26 and 27 of the specification, the differences between the physical properties of high amylopectin cassava starch of the present invention (ACS) and waxy maize starch (WMS) are clearly shown.

For example, as shown in Table 2, ACS contains less protein than WMS. In particular, WMS contains 0.41 mg/g of protein; whereas ACS contains 0.16 mg/g of protein. Thus, ACS contains about 60% less protein than WMS. Starch which has a reduced protein content is useful in applications which require translucent starches.

Additionally, the average chain length distribution of the starch molecules of WMS and of ACS differ, as shown in Table 2. In particular, the average chain length for WMS is approximately 21; whereas the average chain length for ACS is 27. As the average chain length of starch increases, the starch becomes more translucent and more viscous.

Furthermore, the temperature of gelatinization (Tg) of ACS is shown to be lower than that of WMS. See Table 2. The Tg of ACS is 61.7°C; whereas the Tg of WMS is 62.3°C. Another characteristic property of a starch is the difference between the Tg and the top temperature (T_{top}). The T_{top} is the temperature when starch granules are hydrated to their maximum extent. These temperature differences for ACS and WMS are shown in Table 2 as "Tg -T_{top}." The difference for ACS is shown to be 5.9°C; whereas the difference for WMS is shown to be 10.0 °C. Thus, the difference in temperature is about 40% lower for ACS. A lower temperature difference (*i.e.*, a lower Tg -T_{top}) allows for ACS to dissolve more quickly than WMS. (See page 27, line 13, of the specification.)

Finally, ACS is more viscous than WMS, as shown in Table 2. The top viscosity of WMS is 75 RVU; whereas, the top viscosity of ACS is 112 RVU. Thus, the top viscosity of ACS is about 50% higher than the top viscosity of WMS. The top viscosity of a starch is related to the thickening power of a starch. Additionally, there is a large difference between the end viscosities of the two starches. In particular, the end viscosity of WMS is 48 RVU; whereas, the end viscosity of ACS is 87 RVU. Thus, the end viscosity of ACS is about 80% more than the end viscosity of WMS.

Accordingly, "clear and distinguishable" physical differences between the high amylopectin cassava starch of the present invention and the waxy cereal starches of Shieh *et al.* have been demonstrated. Accordingly, the anticipation rejection is overcome.

Rejections under 35 U.S.C. §103(a)

The subject matter of Claims 16-18, 20, 26 and 27 is rejected under 35 U.S.C. §103(a) as being unpatentable over Verberne *et al.* in view of Mitchell *et al.*, and further in view of Tallberg *et al.* Claims 16-18, 20, 26 and 27 have been cancelled. Accordingly, these rejections are obviated.

Applicants respectfully submit that the application is now in condition for allowance, which action is earnestly solicited. If resolution of any remaining issue is required prior to allowance of this application, it is respectfully requested that the Examiner contact Applicants' undersigned attorney at the telephone number provided below.

Respectfully submitted,

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